

said isolated polypeptide is recombinant and mutagenized and belongs to the Order Coleoptera; and

said improved luciferase activity is at least 89.3% compared to the luciferase activity in the absence of benzalkonium chloride.

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35. (New) An isolated polypeptide, comprising an amino acid sequence that is at least 99.6% identical to a polypeptide corresponding to that of an amino acid sequence of wild type luciferase from Genji or Heike firefly and an improved luciferase activity in the presence of a surfactant compared to a polypeptide having luciferase activity in which a mutation has not been introduced; the improved luciferase activity of the isolated polypeptide is not less than 89.3% in the presence of the surfactant compared to its luciferase activity in the absence of a surfactant.

36. (New) The isolated polypeptide according to Claim 35, wherein the surfactant is a cationic surfactant.

37. (New) The isolated polypeptide according to Claim 35, wherein the surfactant is benzalkonium chloride.

38. (New) The isolated polypeptide according to Claim 35, wherein the luciferase activity of said isolated polypeptide is not less than 89.3% in the presence of at least 0.01% of the surfactant compared to the luciferase activity in the absence of a surfactant.

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39. (New) The isolated polypeptide according to Claim 35, wherein an amino acid corresponding to that at the 490 position of luciferase from Genji or Heike firefly is substituted by an amino acid other than glutamic acid.

40. (New) The isolated polypeptide according to Claim 35, wherein said isolated polypeptide comprises an amino acid sequence of SEQ ID NO:4.

41. (New) The isolated polypeptide according to Claim 35, wherein said isolated polypeptide comprises an amino acid sequence comprising additions, deletions, or substitutions of one or more amino acids except for an amino acid corresponding to that at the 490 position in the amino acid sequence shown in SEQ ID NO:4.

42. (New) The isolated polypeptide according to Claim 35, wherein said isolated polypeptide comprises an amino acid sequence of SEQ ID NO:6.

43. (New) The isolated polypeptide according to Claim 35, wherein said isolated polypeptide comprises an amino acid sequence comprising additions, deletions, or substitutions of one or more amino acids except for an amino acid corresponding to that at the 490 position in the amino acid sequence shown in SEQ ID NO:6.

44. (New) An isolated polynucleotide, comprising a polynucleotide sequence that encodes the isolated polypeptide according to Claim 34 or 35.

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45. (New) The isolated polynucleotide according to Claim 44, wherein the nucleotide sequence is SEQ ID NO:3 or SEQ ID NO:5.

46. (New) A recombinant vector, comprising the isolated polynucleotide according to Claim 44.

47. (New) A transformant, comprising the recombinant vector of Claim 46.

48. (New) A process for producing an isolated polypeptide, comprising culturing the transformant of Claim 47 in a medium.

49. (New) A method for measuring intracellular ATP, comprising extracting ATP from at least one cell; contacting the ATP with a bioluminescence reagent comprising the isolated polypeptide according to Claim 34 or 35 wherein the contacting causes bioluminescence; and measuring the amount of bioluminescence.

50. (New) The method according to Claim 49, wherein the contacting is performed in the presence of at least 0.01% cationic surfactant.

51. (New) The method according to Claim 49, wherein the bioluminescence reagent further comprises luciferin.